

REMARKS

Claims 2 and 10-18 are rejected under 35 U.S.C. 112, second paragraph, as failing to particularly point out and distinctly claim the subject matter which applicant
5 regards as the invention. Claims 1-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al. (6,465,359 B2) or Liu et al. (6,380,095 B1); in view of Gulett et al (4,330,569) or Nagahisa et al (5,888,855) or Moore et al (6,323,139 B1); optionally further considering Ohtaka et al (5,108,843).

10 1. Rejection of claim 2 and 10-18 under 35 U.S.C. 112:

Claims 2 and 10-18 have been amended to overcome this 112 rejection. Claims 4, 7, 13, and 17 have been cancelled. Reconsideration of the amended claims 2 and 10-18 is therefore politely requested.

15 2. Rejection of claim 1 under 35 U.S.C. 103(a):

Claim 1 is rejected under 35 U.S.C. 103(a), for reasons of record that can be found on pages 3-6 in the Office action identified above, which is part of paper No. 2003/12/06. To overcome this 103 rejection, claim 1 has been amended. No new matter is introduced. Reconsideration of the amended claim 1 is politely requested.

20 The Applicants submit that none of the cited prior art references discloses: prior to depositing a BSG film having a boron concentration of between 5% and 8% in weight on the silicon nitride film, exposing the silicon nitride film to an oxygen-containing plasma for enhancing adhesion, as required by the amended claim 1. The boron concentration of the BSG film is typically reduced down to a value of
25 below 5% in weight to solve the prior art peeling problem (see paragraph [0007] of the specification of the present application). None of the cited prior art references addresses that such a reduced boron concentration in the BSG film causes difficulty in removing the BSG film in the follow-up cleaning procedures and none of the cited prior art references provides any solutions.

30 Accordingly, the Applicants believe that the amended claim 1 is now in condition for allowance, and such action is therefore politely requested.

3. Rejection on claims 2-9 under 35 U.S.C. 103(a):

As claims 2-9 are dependent upon claim 1, they should be allowable if claim 1 is allowed. Reconsideration of claims 2-9 is therefore politely requested.

5 4. Rejection of claim 10 under 35 U.S.C. 103(a):

Claim 10 is rejected under 35 U.S.C. 103(a), for reasons of record that can be found on pages 3-6 in the Office action identified above, which is part of paper No. 2003/12/06. To overcome this 103 rejection, claim 10 has been amended. No new matter is introduced. Reconsideration of the amended claim 1 is politely requested.

- 10 The Applicants submit that none of the cited prior art references discloses a method of manufacturing a trench on a substrate including the steps of: exposing the silicon nitride film to an oxygen-containing plasma for a predetermined time period for enhancing adhesion; depositing a BSG film having a boron concentration of between 5% and 8% in weight on the silicon nitride film; dry-etching the substrate to form a trench by using the BSG film as an etching mask.
- 15 as required by the amended claim 1. The boron concentration of the BSG film is typically reduced down to a value of below 5% in weight to solve the prior art peeling problem (see paragraph [0007] of the specification of the present application). None of the cited prior art references addresses that such a reduced boron concentration in the BSG film will cause
- 20 difficulty in removing the BSG film in the follow-up cleaning procedures and none of the cited prior art references provides any solutions.

It is respectfully suggested that, in light of the above, none of the cited references, alone or in combination, teaches or makes obvious all of the limitations of claim 10. Reconsideration of claim 10 is therefore politely requested.

25

5. Rejection on claims 11-18 under 35 U.S.C. 103(a):

As claims 11-18 are dependent upon claim 10, they should be allowable if claim 10 is allowed. Reconsideration of claims 11-18 is therefore politely requested.

30

Sincerely yours,

5



Date: 6/15/2004

Winston Hsu, Patent Agent No.41,526

P.O. BOX 506

Merrifield, VA 22116

10 U.S.A.

e-mail: winstonhsu@naipo.com.tw

(Please contact me by e-mail if you need a telephone communication and I will
return your call promptly.)